## REMARKS

### I. Examiner's Response to Amendments

In the Office Action dated January 26, 2010 the Examiner provided a "Response to Amendments" section. The Examiner acknowledge the validity of the IDS submitted on November 18, 2009, withdrew objections to the specification, withdrew objections to the claims, and withdrew rejections based on 35 U.S.C. §112 first and second paragraph. The Applicant respectfully thanks the Examiner for this candid assessment of the application.

The Examiner noted Applicant's arguments regarding claims 1-22 were considered but found not persuasive. The Examiner then cited several section of the MPEP and associated case law. The citations included material governing the examination of claims including the requirement that claims be given their broadest reasonable interpretation consistent with the specification (MPEP 2111), that in determining the differences between the prior art and the claims the question is not whether the differences themselves would have been obvious but whether the claimed invention as a whole would have been obvious (MPEP 2142.02), that in some cases the preamble is not a patentable limitation on the claims, and that limitations appearing in the specification but not recited in the claim should not be read into the claim(MPEP 2106).

The Examiner then reviewed the Applicant's arguments regarding "automatic input", use of a "color sensor", "iterative controller", and references "color conversion table" and concluded these arguments were not persuasive. The Examiner then concluded a prima facie case of obviousness has been established and detailed discussion have been given. The Examiner concludes by acknowledging that obviousness can only be established where there is some teaching, suggestion, or motivation to do so in the prior art or

in the knowledge generally available to one of ordinary skill in the art. The Examiner then asserts "For the above reasons, it is believed that the last Office Action dated 12/13/2007 was proper", and maintains the rejection for claim 1 and its dependent claims therein.

The Applicant respectfully thanks the Examiner for this review of applicable legal standards regarding 35 U.S.C. §103 obviousness and prosecution of the present application to this point. The Applicant also respectfully notes that the claims contain many more limitations than the "automatic input", use of a "color sensor", "iterative controller". The Applicant respectfully requests the Examiner review the Applicant's remarks with respect to each of the claims and the associated arguments as the Applicant respectfully believes a large number of the claims contain limitations not taught or suggested by the references.

## II. Claim Rejections – 35 U.S.C. § 103

### *Requirements for Prima Facie Obviousness*

The obligation of the examiner to go forward and produce reasoning and evidence in support of obviousness is clearly defined at M.P.E.P. §2142:

> The examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. If the examiner does not produce a *prima facie* case, the applicant is under no obligation to submit evidence of nonobviousness.

M.P.E.P. §2143 sets out the three basic criteria that a patent examiner must satisfy to establish a *prima facie* case of obviousness:

1. some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings;
2. a reasonable expectation of success; and
3. the teaching or suggestion of all the claim limitations by the prior art reference (or references when combined).

It follows that in the absence of such a *prima facie* showing of obviousness by the Examiner (assuming there are no objections or other

grounds for rejection), an applicant is entitled to grant of a patent. *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443 (Fed. Cir. 1992). Thus, in order to support an obviousness rejection, the Examiner is obliged to produce evidence compelling a conclusion that each of the three aforementioned basic criteria has been met.

Applicant further notes that the U.S. Supreme Court ruling of April 30, 2007 (*KSR Int'l v. Teleflex Inc.*) states:

> "The TSM test captures a helpful insight: A patent composed of several elements is not proved obvious merely by demonstrating that each element was, independently, known in the prior art. Although common sense directs caution as to a patent application claiming as innovation the combination of two known devices according to their established functions, it can be important to identify a reason that would have prompted a person of ordinary skill in the art to combine the elements as the new invention does."
>
> "To facilitate review, this analysis should be made explicit."

The U.S. Supreme Court ruling states that it is important to identify a *reason* that would have prompted a person to combine the elements and to make that analysis *explicit*.

***Shimizu in view of Mahy and Mestha***

In the Office Action dated January 26, 2010, claims 10-12, 15-16, and 19-20 stand rejected under 35 USC 103(a) as being unpatentable over Shimizu et al (US 7,167,277), hereinafter "Shimizu", in view of Mahy (US 5,832,109), hereinafter "Mahy", and Mestha et al (US 6,236,474), hereinafter "Mestha".

Regarding claims 10 and 11, the Examiner argued that Shimizu discloses a system (citing Fig. 18 and col. 28, lines 5-47) comprising:

a plurality of color values (citing L255*, a255*, and b255* corresponding to CMY color data value, citing col. 2, lines 28-59 and Fig.5, col.10, lines 10-35) automatically provided as input to an image processing device (arguing "L*a*b* values based on the measurement of a patch outputted from the printer corresponding to CYM values are as input initial

value; since the L*a*b* values obtained and inputted in the process are not manually performed, rather, the programmed process is executed and performed by a computer of Figs. 18 and 19, thus, data is automatically provided as input to the image processing device shown in Figs. 18 and 19; citing Figs. 5, 18, and 19; col. 10, line 12-16), wherein said image processing device is under a control of a particular dimensional order (arguing "processing in three-dimensional arrays", citing col. 13, lines 51-65);

a color sensor (arguing "measurement of L*a*b* values indicates a color sensor must be used for color measuring"; citing col. 11, lines 65-67 and col. 12, lines 1-19) for dynamically determining which color value among said plurality of color values has attained a gamut limit (arguing "Shimizu discloses a flow chart or algorithm which has a steps to determining shortest distance from boundary of color gamut in Figs. 7 and 9, judging whether color value is near the color gamut boundary which is actively or dynamically performed"; citing col. 13, lines 5-37 and col. 15, lines 41-66);

an iterative controller (arguing "'iterative controller', a controller processes an iteration loop(s); Shimizu discloses an example of the controller of a printer processes color value for each pixel, (citing col. 1, lines 24-35, and the process of figs. 7, 12 and 13) for generating a color conversion table for printers for converting L*a*b* values to CMY values indicate multiple iteration processes, citing col. 11, line 60 to col. 12, line 42, concluding the controller of a printer must perform iterative loops in the processes of Figs. 7, 12, and 13);

and within said iterative controller (arguing "a conversion table for printer/controller to convert L*a*b* values to CMY values and thus the conversion table is indeed within the controller"; citing col. 11, line 60 to col. 12, line 42; "and in addition, conversion unit or module converts color data to color data inside a target color gamut and is within the color conversion apparatus 10 and is controlled by printer controller", citing Fig. 17, col. 27, lines 37-58).

The Examiner admitted that Shimizu fails to teach a transformation module for automatically reducing said particular dimensional order based on

determining which color value among said plurality of color values has attained said gamut limit; or an adder module for adding feedback obtained through said transformation module, thereby providing improved control for colors that are located external to said gamut.

The Examiner argued in the same field of endeavor, Mahy teaches such a transformation module, arguing Mahy teaches that a transformation module for automatically reducing said particular dimensional order based on determining which color value among said plurality of color values has attained said gamut limit (arguing "Mahy discloses an example mathematical model of 3-ink process with one color value C1 reaches its limit at 0, dimensional order of 3-ink process is automatically reduced to a 2-ink process because an n-ink process is completely characterized by its colorant gamut with a number of colorant limitations; citing col. 14 lines 50-64 and col. 1 lines 49-58).

The Examiner argued in the same field of endeavor Mahy is combinable to modify Shimizu reference for reducing dimensions (citing col. 13, lines 5-15) and by combining Mahy's teaching with Shimizu reference, dimensional order of 3-ink can be reduced to a two-ink process, which can improve the out of gamut color control process.

The Examiner further argued, in the same field of endeavor, Mestha teaches an adder module (arguing "a summing node") for adding feedback obtained through said transformation module (citing Fig. 2, arguing "Controller 114 includes an adder for adding feedback obtained through the transformation block, or module", citing col. 4, lines 3-50), thereby providing improved control for colors that are located external to said gamut (arguing "gamut color error is corrected and thereby to improve image reproduction quality"; citing Figs. 2 and 3, col. 4 line 3 to col. 5, line 29).

The Examiner therefore asserted that it would have been obvious for one skilled in the art to modify Shimizu to include a transformation module for automatically reducing said particular dimensional order based on determining which color value among said plurality of color values has attained said gamut limit, thereby providing improved control for colors that

are located external to said gamut, taught by Mahy; and to include an adder module for adding feedback obtained through said transformation module, thereby providing improved control for colors that are located external to said gamut as taught by Mestha. The Examiner argued the motivation for doing so would have been to improve the control of an L*a*b* value of a certain color which is outside a target color gamut and hence for better image reproduction quality, and further the disclosures provided by Mahy and Mestha could be implemented by one another with predictable results.

The Applicant respectfully disagrees with this assessment for several reasons. First, the Examiner has admitted that the Shimizu reference does not teach a transformation module. The Examiner's exact words were, "Shimizu does not explicitly disclose that a transformation module for automatically reducing said particular dimensional order..." Logic thus dictates that it is impossible that the Shimizu reference then teaches a transformation module within an iterative controller. To be clear, the Examiner has admitted Shimizu does not teach a transformation module as claimed. It is therefore impossible that the Shimizu reference could then teach that such a transformation module is located within an iterative controller.

Further, as the Examiner will note, claim 10 has been amended so that the iterative controller (or references alleged "controller of printer processes") cited in Shimizu no longer teaches or suggests the iterative controller claimed (see arguments below). Thus, the Shimizu in view of Mahy and Mestha references now fully fail to teach or suggest any of the limitations relating to the iterative controller and its relationship with the transformation module as claimed.

The Applicant would like to once again reiterate, <u>the present invention never teaches discusses, considers, describes, or even contemplates a color conversion table in any capacity</u>. The color conversion table does not read on the present invention.

The Applicant further asserts the color sensor cited in Shimizu <u>is not used to determine which color has attained a gamut limit</u> as claimed in the

present invention. The Examiner has cited material in Shimizu that the Examiner argued discloses an algorithm that has steps to determine a shortest distance from a boundary which is dynamically performed. The Applicant respectfully asserts that even if the reference does teach these limitations there is still no teaching or suggestion that a color sensor is used to perform the actions.

Indeed, the material cited by the Examiner explicitly states the cited material teaches "how to generate a color conversion table... in which the color gamut conversion method ... is applied". Thus, the cited material in the reference is explicitly teaching the use of a color conversion table not a color sensor for determining which color has attained a gamut limit (the Applicant respectfully notes the Applicant still disagrees the cited material teaches a method or system for determining which color has attained said gamut limit as the Examiner asserted). The Applicant therefore respectfully asserts the material cited by the Examiner actually teaches directly away from the limitation of the present claims that the color sensor is used to determine which color has attained a gamut limit.

The fact that Shimizu (and the majority of the Examiner's citations to Shimizu) is fundamentally related to the use of color conversion tables highlights the fact that the features of the present invention are not taught or suggested by the reference because they operate in a fundamentally different way.

Finally, the Applicant respectfully asserts the Examiner has verified this analysis in the Examiner's citations to Shimizu. The Examiner first cited material as teaching a color sensor. Then later in the office action the Examiner cited different material as teaching the color sensor being used to determine which color has attained a gamut limit. It is worth noting that none of the material cited with regard to the color sensor speaks to the limitation regarding the function of the color sensor as determining which color has attained a gamut limit. Likewise, the material cited as teaching determining which color has reached a gamut limit actually teaches away from using a color sensor. All in all, it is clear that the color sensor cited in

Shimizu fails to teach or suggest that the color sensor itself is used to determine which color has attained a gamut limit. Thus, the Examiner's own citations speak to the patentability of the present invention.

The Applicant respectfully disagrees that the Shimizu reference teaches an iterative controller. The Applicant respectfully requests the Examiner review the amendment to claim 10. Claim 10 now more clearly illustrates the function of the iterative controller claimed and distinguishes that iterative controller from the "controller of a printer process" cited.

Specifically, the cited material describes the way that color data, for example CMY values, is used to instruct a printer how to print a color. Claim 10, as amended, is now fully unrelated to the printer controller being described in the reference. The referenced "controller" simply "instructs the printing head as to the amount of cyan, magenta and yellow ink that should be painted for each pixel." The presently claimed iterative controller is not used to instruct a printer on how much of each color to paint on a piece of paper. It is used to control the iterative process described in the present claims and disclosure, to reduce the particular dimensional order based on a determination of which color value among said plurality of color values has attained a gamut limit. In view of this amendment, the Applicant respectfully asserts claim 10 is now in condition for allowance.

In sum, the Applicant has presented a multitude of features, both structural and functional, not taught or suggested by the Shimizu reference. In addition, claim 10 has been amended to include the specific function of the iterative controller. This amendment clearly distinguishes the present invention from the cited material because Shimizu fails to teach or suggest an iterative process comparable to that in claim 10.

The Examiner has <u>repeatedly admitted Mahy simply constitutes a statement of the fact that a mathematical space of n dimension's can be defined by its boundaries and that said boundaries have a dimension n-1</u>. This surely does not teach, as the Examiner suggests, <u>using a transformation module</u> to determine colors at or beyond a gamut limit. The language cited by the Examiner is, in essence, a scholarly lecture on the meaning of "color

gamut" and the geometric properties of mathematical spaces followed by a conclusion that this language teaches or suggests use of a transformation module to determine colors that have reached a gamut limit. The fact that the word "transformation" appears in the reference is not sufficient to teach a transformation module as taught by Applicant's invention. A transformation and a transformation module are not the same. In the Mahy disclosure, the word "transformation" is only being used as part of the definition of a color gamut. The Applicant has claimed a transformation module. Such a module indicates an ability to implement a transformation through software. In other words, the Applicant's claims describe the ability to perform a transformation whereas Mahy simply gives a definition. Thus, Mahy fails to teach a module.

The Applicant respectfully notes the Examiner has still failed to offer any explanation of why this argument was not persuasive. The Mahy abstract provides further evidence of the scope of the Mahy reference. The abstract states Mahy is "[a] method and an apparatus disclosed to obtain a color gamut description of a multidimensional color reproduction device." This clearly indicates, as the Applicant has repeatedly asserted, that Mahy is simply a method for describing a gamut, not a module for transforming a gamut.

The Applicant also respectfully asserts the Examiner has not adequately taken into account the relationship between the iterative controller and transformation module. As the Examiner will note, the iterative controller controls the transformation module which is provided within the iterative controller thereby operating iteratively to reduce said particular dimensional order based on a determination of which color value among said plurality of color values has attained a gamut limit. The Examiner argued that the iterative controller is taught by Shimizu, but the transformation module (which, as presently claimed, is being operated iteratively by the iterative controller), is taught by Mahy. However, there is nothing in either Shimizu or Mahy suggesting the limitation as claimed that the transformation module is within the iterative controller (and thereby

being iteratively controlled). This represents yet another structural limitation of the present invention not taught or suggested by the references.

The Applicant respectfully directs the Examiner's attention to MPEP § 2142:

> The key to supporting a rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claim invention would have been obvious … the analysis supporting a rejection under 35 U.S.C. 103 should be made explicit. The Federal Circuit has stated that "rejections on obviousness cannot be sustained with mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness."

The Examiner's assertion that "combining Mahy's teaching with Shimizu et al's reference, dimensional order of 3-ink can be reduced to a two-ink process, which can improve the out of gamut color control process" is a conclusory statement that lacks any articulated reasoning or underpinning as required in the MPEP. Specifically, the Applicant has repeatedly pointed out that the Examiner admitted Shimizu lacks a transformation module, thus it is incumbent on the Examiner to explain why including the alleged transformation module from Mahy in Shimizu would be obvious.

Further, the Examiner's statement that the combination of the references "can improve the out of gamut color control process" is exactly the type of "mere conclusory statement" which is invalid to establish obviousness as described in the MPEP. As such, the Applicant respectfully asserts the Examiner has failed to establish prima facie obviousness.

Further MPEP § 2143.01 VI states:

> If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious.

This is particularly applicable to the present application. The Examiner has repeatedly admitted that Mahy teaches a mathematical fact and is a self-described "method and an apparatus disclosed to obtain a color gamut

description of a multidimensional color reproduction device". Thus, the Mahy reference simply teaches a mathematical truth. In order to establish prima facie obviousness according to MPEP § 2143.01 VI, the Examiner has the burden of describing how a reference to a mathematical explanation of how to describe a color gamut could be used to modify Shimizu without changing the principal of operation. There is absolutely nothing in either the Shimizu or Mahy references which would motivate one or ordinary skill in the art to combine that the gamut description method described in Mahy with the Shimizu invention.

Further, the Examiner claims the combination could yield predictable results without citing anything explaining how or what that predictable result would be. Simply restating words literally derived from the Applicant's own claims, that the result would be improved gamut control, is not enough to establish prima facie obviousness. The Examiner must offer some explicit explanation of how that result would be achieved and what it would be without the benefit of hindsight (which includes the Applicant's specification).

Likewise, the Applicant respectfully asserts both the Shimizu and Mahy inventions function without need for an adder module. Thus, the Examiner must offer some explanation of how including an adder module in Shimizu would improve the Shimizu invention without changing the mode of operation of the reference. The Applicant respectfully asserts the Examiner's conclusory statement that the combination would "provide improved control for colors that are located external to said gamut" is insufficient to establish prima facie obviousness in accord with the MPEP citations provided above.

Based on the arguments presented above the Applicant respectfully requests the rejection of claims 10 and 11, based on 35 USC 103, be withdrawn.

Regarding claim 12, the Examiner argued "Shimizu teaches wherein said particular dimensional order comprises a three-dimensional order" ( arguing "color conversion table is used to store the calculated three-dimensional arrays of C[L][a][b], M[L][a][b] and Y[L][a][b] citing col. 12, lines 30-42).

The Applicant notes if an independent claim is not obvious any claim dependent on that claim is also not obvious. In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). The Applicant respectfully submits Claim 12 is a dependent claim. Therefore, based on the arguments made in favor independent claim 10, the Applicant requests the rejection of claim 12 be withdrawn.

Regarding claims 15 and 16 The Examiner admitted Shimizu does not teach a transformation module where said module further comprises a transformation module for reducing said three-dimensional order to a one dimensional order.

The Examiner argued Mahy teaches such a transformation (arguing Mahy discloses a mathematical model showing how a 3-dimensional order is reduced to 1-dimensional order, citing col. 12, lines 36-64).

Therefore, the Examiner argued it would have been obvious to one of ordinary skill in the art at the time of invention to have modified Shimizu to include a transformation module that reduces a three-dimensional order to said one-dimensional order as taught by Mahy because it helps to determine the exact boundaries of the color gamut per lightness level from a set of discrete points (citing col. 4, lines 17-43). Therefore, by combining Shimizu with Mahy, a predicable success of controlling out-of-gamut memory and index color can be achieved.

The Applicant respectfully disagrees with this assessment. As previously discussed, the material cited in Mahy absolutely fails to discuss a <u>transformation module</u> (software) in any capacity. Further, the material does offer a very broad, generalized description of some of the qualities and properties of color gamut boundaries and the Neugebauer model. This literally has no relation to a transformation <u>module</u> that specifically takes a three-dimensional order to a one-dimensional order.

The Applicant respectfully reminds the Examiner that according to MPEP § 2143.01 the proposed modification cannot render the prior art unsatisfactory for its intended purpose and the proposed modification cannot change the principle of operation of a reference. A simple description of the

properties of color gamut boundaries and the fact that the Neugebauer equations "immediately reveal that a 1-ink process transforms onto a straight line in color space" (see col. 12, lines 63-64) do not establish how the reference might fit with Shimizu without changing its mode of operation. Further, the references do not teach any of the limitations of claims 15 and 16. The reference fails even to discuss a concept as foundational as a starting order of three-dimensions transformed to a finishing order of one dimension. This is in part a result of the fact that Mahy is intended only to describe a gamut; it is not primarily a method for reducing dimensional order.

The Applicant notes that the word "transform" does appear in Mahy. However, its use is not in consideration of a reduction of a three-dimensional order to a one-dimensional order. With respect to the first prong of the aforementioned Prima Facie Obviousness test, the Applicant reminds the Examiner that the language of the references may not be taken out of context and combined then without motivation, in effect producing the words of the claims (and sometimes, not even the words or concepts of the claims), without their meaning or context.

Therefore, the limitations of claims 15 and 16 are not taught or suggested by Mahy and claims 15 and 16 are therefore not obvious. The Applicant respectfully requests, in light of the above argument, that the rejection of claims 15 and 16, based on 35 USC 103, be withdrawn.

Regarding claim 19, The Examiner argued Shimizu teaches a color rendering device associated with a transformation module wherein said transformation module is integrated with said image processing device (citing Figs. 6-7 and 18-19, a color conversion table for printer for converting L*a*b values to CMY values, citing col. 60 to col. 12, line 19).

The Applicant respectfully disagrees with this assessment. The Applicant concedes Shimizu does teach a system in which a color-rendering device is present. This is made clear in Fig. 19 and col. 28 lines 53-55. However, the key feature of claim 19 is that the transformation module is integrated with the image processing device. The Shimizu reference makes

no mention of such integration. The material cited by the Examiner describes the printer creating a color conversion table; not the integration described in the claims.

As a structural limitation of the present invention, it is crucial to understand that the present limitation requires that the transformation module be integrated with the image processing device. The Examiner has cited a color-rendering device, and a color conversion chart. The color conversion chart does not teach a transformation module. But more importantly the color conversion chart is not integrated in the color rendering device. Thus, the elements cited by the Examiner fail to teach either functionally or structurally the limitations of the present claims.

As a final point, in the rejection of claim 10, the Examiner admitted "Shimizu does not explicitly disclose a transformation module for automatically reducing said particular dimensional order...". The Examiner has, in effect, admitted that no transformation module is present in Shimizu. This logically means it is impossible that Shimizu now teaches the integration of such a transformation module in a color rendering device.

The Examiner has repeatedly failed to respond to this argument. The Applicant respectfully asserts the fact that the Examiner has explicitly admitted the Shimizu reference does not teach a transformation module and then later argues the reference teaches a transformation module integrated with a image processing device seems to suggest a lack of careful attention to the Applicant's arguments if for no other reason than that the Examiner has failed to offer any explanation of why this logic is not persuasive. The Applicant respectfully reminds the Examiner that if even one of the limitations of the Applicant's claims is not taught or suggested in the prior art a case of prima facie obviousness has not been established. Thus, every argument presented by the Examiner and Applicant deserves careful attention. The Applicant respectfully requests that the rejection of claim 19, based on 35 USC 103, be withdrawn.

Regarding claim 20, The Examiner argued Shimizu teaches an iterative controller whose iterative output is input to said color rendering device

(arguing Input/Output Device 25 of Fig. 18 and Printer 32 of Fig. 19), such that said iterative output of said iterative controller reflects a plurality of compensated color values requiring correction for rendering variations thereof (arguing "the process of color transform and compensation is performed for each color value data of each pixel by the controller of a printer, citing col. 1, lines 30-40; arguing "thus the processes of figs 5-16, must repeated for each pixel color value data).

The Applicant respectfully disagrees with that assessment. The Applicant respectfully requests the Examiner review the amendment to claim 10 which more clearly describes the function of the iterative controller claimed. As amended, the Applicant respectfully asserts it is clear that the "printer controller" cited does not teach or suggest the iterative controller claimed.

Further, neither the input/output device 25 nor printer 32 shows an iterative controller output as input to a color rendering device. Indeed, neither figure shows any <u>input</u> of any kind. Thus, the Applicant respectfully asserts these figures do not teach "an iterative controller's iterative output is input to said color rendering device". The fact that the reference includes figures of Input/Output devices and printers has literally, no connection with the limitation of claim 20. In order for these figures to read on claim 20 they must include some indication of an iterative controller, output from that controller, and that output being used as input. None of these features of the claim are taught or suggested by Figs. 18 and 19. The Applicant respectfully reminds the Examiner in establishing prima facie obviousness it is insufficient to simply find the words used in the Applicant's claims in a reference without considering their context or meaning as used in the reference. The Applicant respectfully requests the rejection of claim 20 be withdrawn.

***Shimizu in view of Mahy and Mestha and further in view of Holub***

In the Office Action dated January 26, 2010, claims 13-14, 17-18, and 21-22 stand rejected under 35 USC 103(a) as being unpatentable over Shimizu et al (US 7,167,277), hereinafter "Shimizu", in view of Mahy (US 5,832,109), hereinafter "Mahy", and Mestha et al (US 6,236,474), hereinafter "Mestha", and further in view of Holub (US 6,750,992), hereinafter "Holub".

Regarding claim 13, the Examiner admitted Shimizu does not teach wherein said compensation module further comprises a transformation module for reducing said three-dimensional order to a two-dimensional order using a standard International Color Consortium (ICC) framework. The Examiner argued Mahy teaches such a transformation module (arguing "reducing a 3-dimensional color space to a two-color space", citing col. 12, lines 19-32).

The Examiner argued Holub teaches compensation using a standard ICC framework (arguing "compensation function LUTs to compensate for any non-linearities between light intensity"; citing col. 20, lines 4-34, and using the internationally accepted standard, col. 44, lines 65-66).

The Examiner therefore argued it would have been obvious to one of ordinary skill in the art at the time of invention to have modified Shimizu to include said transformation module further comprising a transformation module for reducing said three-dimensional order to a two-dimensional order taught by Mahy because it helps to determine the exact boundaries of the color gamut per lightness level from a set of discrete points (citing col. 4, lines 17-43), and then to modify the aforementioned combination with the claimed teaching of Holub above. The Examiner argued the motivation for this combination is to compensate color value difference with a well recognized standard which quantifies color in terms of what normal humans see, rather than in terms of a specific samples or instances of color produced by particular equipment, so that a predictable success of controlling out-of-gamut memory and index color can be achieved.

The Applicant respectfully disagrees with this assessment. First, the cited language in Mahy cannot be construed to teach or suggest a

"transformation module", which is defined by Mahy as a mathematical function that expresses color value (col. 1, lines 44-50 of Mahy). This means even by the standard defined in Mahy, this is not a "transformation module" and certainly not a "compensation module" as claimed. The Applicant asserts Mahy does not teach or suggest the limitations of claim 13 necessary to establish prima facie obviousness.

Further, the Examiner has failed to offer any citation to material teaching or suggesting a compensation module in the Holub reference. The Examiner in fact argued Holub teaches "compensation function LUTs to compensate for any non-linearities between light intensity". However, as the Examiner will note this is not the limitation being claimed. Rather, the present claim describes a compensation module as part of a transformation module used to reduce a three-dimensional order to a two dimensional order. To reiterate, the Applicant is not claiming the "option of converting color transformational components of the Virtual Proof into standardized file formats"; rather the Applicant is claiming a compensation module for reducing said three-dimensional order to a two-dimensional order using a standard International Color Consortium (ICC) framework.

Here once again, the Examiner has found words in the reference and matched them up with words in the claims. The fact that the reference and the claims share the words "International Color Consortium" is not enough to establish that the references teach a compensation module that uses an ICC framework to convert a three-dimensional order to a two dimensional order. The context of the reference to the ICC in Holub is completely removed from any notion even slightly comparable to claim 13.

While the Examiner explains "the motivation is to compensate color value difference with a well recognized standard which quantifies color in terms of color produced by particular equipment", this represents a conclusion drawn by the Examiner, not a conclusion suggested explicitly in the references, as required by the holding in KSR Int'l v. Teleflex Inc. The Applicant once again directs the Examiner's attention to the MPEP which states "obviousness cannot be sustained by mere conclusory statements..."

Indeed, the Examiner has given a succinct explanation of the purpose of the ICC but has failed to connect that with the limitations of the claims or the references in any meaningful way. The Applicant respectfully requests the rejection of claims 13, based on 35 USC 103, be withdrawn.

Regarding claim 14, the Examiner admitted that Shimizu does not teach wherein said compensation module reduces said three-dimensional order to said two-dimensional order in response to determining which colors among said plurality of colors have attained said gamut limit.

The Examiner argued Mahy teaches such a transformation (or compensation) module (citing Fig. 3; col. 12, lines 19-32; and col. 14, lines 34-46). Therefore, the Examiner argued it would have been obvious to one of ordinary skill in the art at the time of invention to have modified Shimizu to include a transformation module that reduces a three-dimensional order to said two-dimensional order in response to determining which colors among said plurality of colors have attained said gamut limit taught by Mahy because it helps to determine the exact boundaries of the color gamut per lightness level from a set of discrete points (citing col. 4, lines 17-43). Therefore, by combining Shimizu with Mahy, a predicable success of controlling out-of-gamut memory and index color can be achieved.

The Applicant respectfully disagrees with this assessment. The transformation described in Mahy is used to determine contours that ultimately are used to define the color gamut. Col. 12, lines 19-32 do not describe a transformation module <u>even according the definition of "transformation module" provided by Mahy</u>.

Likewise, Fig. 3 is described as "the colorant domain of the boundary 2-ink process with c3=0% of a 3-ink process with a total colorant limitation of 250%." This offers literally, no teaching or suggestion of order reduction based on the dynamic determination of which color has attained a gamut limit as claimed.

Finally, col. 14, lines 34-64 highlight, as discussed above, that Mahy function differently than the present invention. The material cited teaches "a color gamut description ... for a limitation on the sum of three colorants of

250%". Again, this simply fails to teach the specific limitations of claim 14 in any capacity.

The Examiner concluded by citing col. 4, lines 17-43 in an effort to establish a motivation for the combination of Mahy and Shimizu. However, the cited language offers absolutely no explanation of how the order reduction described in claim 13 would improve the Shimizu invention, as required by the holding in KSR Int'l v. Teleflex Inc. and the cited material from the MPEP. The Applicant respectfully asserts the Examiner has failed to establish prima facie obviousness.

Therefore, the Applicant argues all the limitations of claim 14 are not taught or suggested by Mahy and that claim 14 is therefore not obvious. The Applicant respectfully requests, in light of the above arguments, that the rejection of claim 14 be withdrawn.

Regarding claims 17 and 18, the Examiner admitted Shimizu and Mahy fail to teach a color sensor comprised of an offline sensor and an inline sensor.

The Examiner argued Holub teaches wherein said color sensor comprises an offline sensor (citing Fig. 3A, col. 11, lines 66-67; and col. 12, lines 1-19, arguing "an offline sensor, a color measuring instrument, or CMI for measuring the color output of the rendering device) and an inline sensor (citing Fig. 3B-C, col. 15, lines 42-67; and col. 16, lines 1-24, arguing "an inline sensor, a CMI as a unitary colorimeter SOM 13 take color measurements via lens system by connecting to the fiber optic pickup).

The Examiner argued it would have been obvious to one skilled in the art at the time of the invention to modify Shimizu and Mahy to include an offline and an inline sensor taught by Holub to improve communication, control and quality of color reproduction (citing col. 3, lines 3-15). The Examiner therefore argued by combining Shimizu and Mahy with Holub, a predictable success of controlling out-of-gamut memory and index color can be achieved.

The Applicant respectfully disagrees with this assessment. First, the Applicant strongly disagrees col. 11, line 65 –col. 12, line 19 ever discusses

an offline sensor as the Examiner claims. The Applicant has carefully read and reread the material but no teaching or suggestion of an offline sensor is present. Likewise, Fig. 3A simply does not offer any teaching of an offline sensor of any kind. This is supported by the fact that none of the cited material, and indeed, none of the elements in Fig. 3A are labeled as, or indicate an "offline sensor". The cited material does give a generalized overview of the system of nodes used in the Holub reference. While the Applicant assumes this is the material to which the Examiner is referring, <u>the Applicant still asserts this does not teach an offline sensor in any capacity</u>.

The material the Examiner cited as teaching an inline sensor does not read on the present invention. The reference describes a sensor "built in" to a rendering device. The inline sensor, described in the present invention is not built into a rendering device. <u>The reference goes on to explain the preferred method of such a sensor is a faceplate for a computer screen</u>. This has literally no relation to the technology being described in the present invention. The inline sensor described in the present invention is intended to be an independent element included in the system as described, not a faceplate on a computer screen. The Applicant once again reminds the Examiner that <u>prima facie obviousness requires more than a recitation of the words from a claim in a reference without consideration of context and, in this case, the explicit description of the element as a computer screen faceplate</u>.

The invention described in Shimizu would not benefit from the inclusion of an inline or offline sensor as described in the Applicant's claims. The Shimizu reference only requires a sensor generally. That means the technique described in Mahy and Shimizu would not be improved by adding an inline or offline sensor. Thus, one skilled in the art would have no motivation to incorporate the alleged Holub sensor in Shimizu or Mahy.

The Examiner cited "improve[d] communication, control and quality of color reproduction" as motivation for the inclusion of the Holub sensor in Shimizu. However, the Examiner has failed to explicitly explain <u>how</u> the inclusion of an inline or offline sensor in the Shimizu reference would improve

its function over the sensor already used, as required by the holding in *KSR Int'l v. Teleflex Inc* and according to the MPEP § 2143. How would including an inline or offline sensor in Shimizu change the functionality of that invention? There is no reasonable expectation that the combination of the alleged Holub sensor with the Mahy or Shimizu invention would successfully produce Applicant's invention. The Examiner's standard explanation that this combination would provide "improved controls for colors of certain L*a*b values" and that they could be "implemented for one another with predictable results" still fails to offer the essential "how" explanation required to establish prima facie obviousness.

The Applicant respectfully notes it still appears the Examiner has wholly ignored this argument in the face of the overwhelming evidence presented. The rejection remains unmodified and no response to these arguments has been provided. The Applicant respectfully asserts the above arguments should be given full consideration as the references clearly do not meet the requirements to establish a case of prima facie obviousness. The Applicant respectfully requests the rejection of claims 17 and 18 be withdrawn.

Regarding claim 21, the Examiner argued Shimizu teaches wherein said color rendering device comprises a printer (citing Printer 32 and Fig. 19).

The Applicant agrees with this assessment. However, the Applicant refers the Examiner to the above argument regarding non-obvious dependent claims (In re Fine). In light of this argument, the Applicant respectfully requests that the rejection of claim 21, based on 35 USC 103, be withdrawn.

Regarding claim 22, the Examiner argued Shimizu teaches wherein said color rendering device comprises a photocopy machine (arguing Input/Output device 25 of Fig. 18).

The Applicant respectfully disagrees with that assessment. It is important to appreciate that <u>a photocopy machine is never mentioned in the Shimizu reference</u>. It is further worth noting that I/O devices include an

extraordinarily large number of possible devices. Thus, it appears the specificity of this claim has not been considered, taught or suggested by the Shimizu reference. This is further evidenced by the constant reference in the Shimizu reference to printers but the lack of a single reference to a photocopy machine.

Finally, Fig. 18 shows "a hardware environment needed to realize the method of the present invention by causing a computer to execute a program (col. 9, lines 7-10). In other words, Fig. 18 illustrates a computer system's hardware. As such, element 25 is not a photocopy machine. In fact the Shimizu reference specifically states, "input/output device 25 ... includes a display, keyboard, mouse, etc. and is used to <u>input commands or data needed</u>..." (col. 28, lines 36-38). Element 25 in Shimizu clearly does not teach or suggest a photocopy machine.

To establish prima facie obviousness the Examiner is required to specifically cite and explain how each and every feature of the challenged invention is taught or suggested by the reference. Since nothing in any of the references suggests the use of a photocopy machine in any capacity, the Applicant respectfully asserts the Examiner has failed to establish prima facie obviousness.

The Examiner has failed to explain why this argument was not persuasive. Based on the specific language from the Shimizu reference itself, it is clear that element 25 is intended primarily as an input device used to input commands. It is clear from this language that interpreting element 25 as a photocopy machine is far beyond the intent or scope of the Shimizu disclosure. The Applicant respectfully requests that the arguments presented above be adequately considered. The Applicant also respectfully requests that the rejection of claim 22, be withdrawn.

***Shimizu in view of Mahy***

In the Office Action dated January 26, 2010, claims 1-5 stand rejected under 35 USC 103(a) as being unpatentable over Shimizu et al (US

7,167,277), hereinafter "Shimizu", in view of Mahy (US 5,832,109), hereinafter "Mahy".

Regarding claim 1, The Examiner noted claim 1 is directed to a method claim that meets the 35 U.S.C. 101 statutory requirements. The Applicant notes this statement and appreciates the Examiner's candid assessment of the inventions patentability under 35 U.S.C. 101.

The Examiner argued Shimizu discloses a method comprising: a plurality of color values (such as L255*, a255* and b255* value, corresponding to CMY color data value citing col. 2, lines 28-59 and Fig.5, col.10, lines 10-35) as input to an image processing device (arguing "L*a*b* values based on the measurement of a patch outputted from the printer corresponding to CYM values are as input initial value; since the L*a*b values obtained and inputted in the process are not manually performed, thus data is automatically provided as input to the image processing device, citing Figs. 5, 7, 18, and 19; col. 11, line 65 - col. 12, line 19), wherein said image processing device is under a control of a particular dimensional order (arguing "processing in three-dimensional arrays", citing col. 13, lines 51-65); dynamically determining which color value among said plurality of color values has attained a gamut limit (arguing "Shimizu discloses a flowchart or algorithm which has a steps to determining shortest distance from boundary of color gamut in Figs. 7 & 9, judging whether color value is near the color gamut boundary which is actively or dynamically performed", citing col. 13, lines 5-37 and col. 15, lines 41-66).

The Examiner admitted Shimizu fails to teach transforming said particular dimensional order of said color which was determined to have attained said gamut limit in response to determining which color value among said plurality of color values has attained gamut limit and thereafter automatically reducing said particular dimensional order through use of a dedicated gamut mapping function allowing for an improved estimate of said color based on said reduced dimensional order, thereby providing improved control for colors that are located external to said gamut and maintaining said color's hue.

The Examiner argued Mahy teaches these limitations (arguing one color value C3 reaches its limit at 0, dimensional order of 3-ink process is automatically reduced to 2-ink process because an n-ink process is completely characterized by its colorant gamut with a number of colorant limitations; citing col. 14, lines 50-64 and col. 1, lines 49-58; and citing col. 14, lines 50-64 and col. 1, lines 49-58); and automatically reducing said particular dimensional order through use of a dedicated gamut mapping function utilized to determine surface points and axes (arguing "one color value C3 reaches its limit at 0, dimensional order of 3-ink process is automatically reduced to 2-ink process because an n-ink process is completely characterized by its colorant gamut with a number of colorant limitations, citing col. 14, lines 50-64 and col. 1, lines 49-58, arguing " a surface of colorant in a three-dimensional color space is mapped to the 2-dimensional color gamut boundaries, citing col. 12, lines 35-49, and Figs. 14A-14H disclose cross sections of pints and axes, citing col. 11, lines 30-50) thereby allowing for an improved estimate of said color based on said reduced dimensional order (arguing "Mahy discloses an example mathematical model of 3-ink process with one color value c3, reaches its limit at 0, dimensional order of 3-ink process is automatically reduced to 2-ink process because an n-ink process is completely characterized by its colorant gamut with a number of colorant limitations"; citing col. 14, lines 50-64 and col. 1, lines 49-58); and thereby providing improved control for colors that are located external to said gamut (arguing "Mahy explored the method to improve control of colors that are located outside of the gamut"; classes 2 and 4, citing col. 16, line 26 to col. 17, line 34) and maintaining said color's hue (arguing "maintained constant hue"; citing col. 21, lines 10-31).

The Examiner argued Mahy's teaching is combinable to modify Shimizu reference for reducing dimensions (arguing "If the amount of conversion C is 10 or less, it is judged that the point ins near to a color gamut boundary, and a point (Ld0, ad0, bd0) in an L*a*b* space is converted to the nearest point on the color gamut boundary on the condition that Ld0=L0, ad0=a0, and

bd0=b0 using the closest neighborhood method described earlier in which problem 1 is likely to occur (step S19)"; citing col. 13, lines 5-15), and by combining Mahy's teaching with Shimizu reference, dimensional order of 3-ink can be reduced to a two-ink process, which, can improve the out of gamut color control process.

The Examiner further argued it would have been obvious to one skilled in the art to modify the system of Shimizu to include that transforming said particular dimensional order of said color which was determined to have attained said gamut limit, in response to dynamically determining which color value among said plurality of color values has attained gamut limit; and thereafter automatically reducing said particular dimensional order through use of a dedicated gamut mapping function utilized to determine surface points and axes, thereby allowing for an improved estimate of said color based on said reduced dimensional order, thereby providing improved control for colors that are located external to said gamut and maintaining said color's hue as taught by Mahy reference. The Examiner argued the motivation for doing so would have been to improve the control of an L*a*b* value of certain color which is outside a target color gamut and hence for better image reproduction quality, and further the mathematical model provided by Mahy could be implemented by one another with predictable results.

The Applicant respectfully disagrees with this assessment. First, the Applicant respectfully asserts the arguments made in favor of claim 10 apply equally against the rejection of claim 1. In the interest of brevity those arguments are not repeated.

The Applicant respectfully disagrees that Mahy teaches the use of a dedicated gamut mapping function. First, the Examiner has failed to identify what specifically in the Mahy reference teaches or suggests a dedicated gamut mapping function.

The following is a summation of the material the Examiner cited as teaching the above limitations "a color gamut description for a limitation on the sum of the three colorants of 250%" (<u>this has literally no connection to a dedicated gamut mapping function</u>); the inversion of an n-ink process based

on printer model (which is unrelated to the presently claimed invention in its entirety); a factual discussion of the properties of 3-dimensional space geometry; graphs representing "the cross section of the color gamut in CIELAB..."; and a description of those graphs. <u>There is absolutely nothing in the preceding citations even remotely related to a dedicated gamut mapping function as claimed</u>.

Specifically, nothing in the aforementioned material teaches or suggests the presently rejected limitations of claim 1. Any number of graphs will include surface and axes points. <u>Citing a graph with surface points and axes points does not teach or suggest the specific limitations of the claim.</u> The graph cited is wholly unrelated to a dedicated gamut mapping function or its use to reduce dimensional order. In order to establish prima facie obviousness the reference must specifically describe a dedicated gamut mapping function used as it is used in the present invention. That burden simply has not been met.

Additionally, the Examiner argued Mahy teaches "maintaining said color's hue", citing col. 21, lines 10-31. First, <u>the words "maintained constant hue" do not appear in the referenced material as the Examiner suggests through quotation</u>. Instead of evaluating the meaning of the material cited, the Examiner has simply found the word "hue" in the reference and therefore reached the conclusory opinion that the Applicant's claim has been taught. <u>The fact that this discussion includes the word "hue" does not mean that the reference teaches the specific limitations of the claim.</u> As explained above the MPEP requires an some explanation of the rational underpinning for a conclusion of obviousness; a simple recitation of the words from the Applicant's claims is not enough.

With respect to the first prong of the aforementioned Prima Facie Obviousness test, the Applicant reminds the Examiner that <u>the language of the references may not be taken out of context and combined then without motivation, in effect producing the words of the claims (and sometimes, not even the words or concepts of the claims), without their meaning or context</u>.

Based on the arguments presented above the Applicant respectfully requests the rejection of claim 1, based on 35 USC 103, be withdrawn.

Regarding claim 2, the Examiner argued Shimizu discloses wherein a color sensor (arguing "measurement of L*a*b* values indicates that a color sensor must be used for color measuring, citing col. 11, lines 65-67 and col. 12, lines 1-19) is used in dynamically determining which color value among said plurality of color values has attained a gamut limit (arguing "Shimizu discloses a flow chart or algorithm which has a steps to determine shortest distance from boundary of color gamut in Figs. 7 & 9, to obtain CMY value corresponding to an L*a*b* value based on the measurement value of a patch outputted from the printer; thus the distance between a point whether inside or outside the gamut and the boundary of gamut must be dynamically determined utilizing a color sensor, citing col. 11, line 60 to col. 12, line 5).

The Applicant respectfully disagrees with this assessment. Per the Arguments made in favor of claim 10 above, the Applicant asserts the reference does not teach or suggest the <u>use</u> of a color sensor <u>in the way described in the present claim</u>.

The Applicant believes the Examiner's rejection underscores the differences between the present invention and the reference. The Examiner first argued the creation of the color conversion table indicates a color sensor must be used <u>for measuring color</u>. Note, the present claim states the color sensor is used <u>to determine which color has attained gamut limit</u>.

The Examiner goes on cite a different section of the reference arguing this material teaches an algorithm to determine distance from the gamut boundary. Thus, the Examiner's own rejection of the claim has established that two separate elements (the color conversion table serving to measure color, and the algorithm or flowchart) are operated independently. <u>Assuming both these elements do teach what the Examiner suggests (which the Applicant still does not accept) neither teaches or suggests an independent color sensor used to determine which colors have attained gamut limit</u>.

While the Applicant acknowledges the relative scope of the Shimizu reference, it is still the Examiner's burden to identify a teaching or suggestion

of each and every limitation of the claim in order to establish prima facie obviousness. Thus, the Examiner must identify a color sensor used to determine which colors have attained a gamut limit in order to properly make a case for prima facie obviousness. The Examiner has not met this burden with respect to this limitation. The Applicant therefore respectfully requests the rejection of claim 2 be withdrawn.

Regarding claim 3, the Examiner stated the claim recites identical features to claim 12. As such, the Applicant respectfully asserts the arguments made in favor of claim 12 apply equally to the rejection of claim 3. The Applicant respectfully requests the rejection of claim 3 be withdrawn.

Regarding claim 4, the Examiner stated the claim recites identical features to claim 13. As such, the Applicant respectfully asserts the arguments made in favor of claim 13 apply equally to the rejection of claim 4. The Applicant respectfully requests the rejection of claim 4 be withdrawn.

Regarding claim 5, the Examiner stated the claim recites identical features to claim 15. As such, the Applicant respectfully asserts the arguments made in favor of claim 15 apply equally to the rejection of claim 5. The Applicant respectfully requests the rejection of claim 5 be withdrawn.

***Shimizu in view of Mahy and further in view of Terekhov***

Claim 6 stands rejected under 35 USC 103(a) as being unpatentable over Shimizu in view of Mahy and further in view of Terekhov (US2004/0096104).

Regarding claim 6, the Examiner admitted Shimizu does not disclose wherein a ray-based approach consisting of a ray being drawn from a desired color to a point on a neutral axis through said gamut limit is used to perform said gamut mapping.

The Examiner argued Terekhov teaches these limitation (citing figs 8A, 8B and 9, arguing "a ray-based approach consisting of a ray from L*-axis, a neutral axis through gamut limit is used for gamut mapping, Par. 63").

The Examiner argued it would have been obvious to have modified Shimizu and Mahy to include the above teachings of Terekhov to improve color mapping of gamut because gamut mapping requires coordinates of the points having the maximal chromaticity for a current gamut boundary (citing paragraph 71). The Examiner argued by combining Shimizu and Mahy with Terekhov, a predictable success of gamut mapping can be achieved.

The Applicant respectfully disagrees with this assessment. The Examiner cites Figs. 8A, 8B and 9 as teaching the ray based approach described in claim 6. However, the specification of Terekhov specifically states <u>that Fig. 8A illustrates distribution rays in a plane, Fig. 8B illustrates points where those rays intersect the boundary of the device gamut, and Fig. 9 illustrates an example of ray-triangle-inclusion</u>. Nothing in this description suggests the approach of drawing a ray from a point <u>through a neutral axis,</u> as specifically claimed in the present invention.

Indeed the Examiner's own admission that the Terekhov approach consists of a ray "<u>from</u> L*-axis ..." <u>highlights the fact that, in the reference, the ray originates at the axis and not at the desired color</u>. As such, the Examiner's own words have established the reference fails to teach or suggest a ray-based approach where the ray <u>originates at a desired color and is traced through a neutral axis as claimed</u>.

Further, the Examiner argued the combination of Shimizu and Mahy with Terekhov would yield the predictable result of gamut mapping. However, the Examiner previously argued that Mahy teaches a gamut mapping function. Pretending Mahy had established a gamut mapping function, there is no motivation to substitute that function for another. Mahy is directed to a method of describing a gamut using a method based on dividing domain of the device into a number of sub domains such that the union of sub domains equals the total color gamut of the color reproduction device (see Abstract). As such, the Examiner must establish, through citation, some expectation of success in using the claimed ray based approach within the framework of the method described in Mahy. In other

words, there is no reason to believe including a ray based gamut mapping method from Terekhov would improve the method described in Mahy.

Further, the fact that Shimizu does not use a gamut mapping function at all means there is absolutely no reason to believe applying a gamut mapping function to that already functioning device would yield any practicable result. Simply stating that including a new element in an old invention will work is not enough to establish obviousness. The Examiner must further explain why such a combination would be obvious. In this case, no person skilled in the art would expect any improvement on the Mahy or Shimizu inventions by haphazardly including a ray-based gamut mapping function.

The Applicant once again respectfully requests some explanation of why this argument is not persuasive. The Applicant has cited specific language from the reference itself that directly contradicts the Examiner's interpretation of the material. Yet the Examiner continues to reject the claim using the exact same citations to the exact same material without ever offering some justification for the interpretation of the reference. The Applicant respectfully asserts each and every claim and the limitations therein deserve thoughtful consideration. The Applicant respectfully requests the rejection of claim 6, based on 35 USC §103 be withdrawn.

### *Shimizu in view of Mahy and Terekhov and further in view of Holub*

Claims 7 and 8 stand rejected under 35 USC 103(a) as being unpatentable over Shimizu in view of Mahy and Terekhov and further in view of Holub (US 6,750,992).

Regarding claim 7 and 8, the Examiner admitted Shimizu, Mahy, and Terekhov do not teach wherein said color sensor comprises an offline sensor and an inline sensor.

The Examiner argued Holub teaches wherein said color sensor comprises an offline sensor (citing Fig. 3A and col. 11 lines 66-67 and col.

12, lines 1-19, arguing "an offline sensor, a color measuring instrument, or CMI for measuring the color output of the rendering device") and an inline sensor (citing figs. 3B-C, col. 15, lines 42-67 and col. 16, lines 1-24, arguing "an inline sensor, a CMI as a unitary colorimeter SOM 13 take color measurements via lens system by connecting to the fiber optic pickup").

The Examiner argued it would have been obvious to modify Shimizu, Mahy, and Terekhov to include the above claimed limitations of Holub to improve communication, control and quality of color reproduction (citing col. 3, lines 3-15 without citing which reference). The Examiner therefore argued by combining the combination of Shimizu, Mahy, and Terekhov with Holub, a predictable success of controlling out-of-gamut memory and index color can be achieved.

The Applicant respectfully the arguments made in favor of 17 and 18 apply equally against the rejection of claims 7 and 8. In the interest of brevity those arguments are not repeated. The Applicant respectfully requests the rejection of claims 7 and 8 be withdrawn.

***Shimizu in view of Ohkub***

Claims 23 stands rejected under 35 USC 103(a) as being unpatentable over Shimizu in view of Ohkub (US 6,229,916), hereinafter "Ohkub".

Regarding claim 23, the Examiner argued Shimizu discloses a method comprising: automatically providing a plurality of desired L*a*b* memory color values (arguing "such as L255*, a255*, and b255*, memory values, corresponding to CMY color data value" citing col. 2, lines 28-59, and Fig. 5 "L*a*b* value is input to the system for process, citing col. 10, lines 10-35) as input to a transformation module (arguing "L*a*b* values based on the measurements of a patch outputted from the printer corresponding to CYM values are as input initial value; since the L*a*b* values obtained and inputted in the process are not manually performed, rather, the programmed process is executed and performed by a computer of Figs. 18 and 19, thus, data is automatically provided as input to the image processing device shown

in Figs. 18 and 19"; citing Fig. 5, col. 10, lines 12-16); transforming said L*a*b* memory color values into NCD memory color values using a transformation function (citing Fig. 5, step 5, arguing "L*a*b* is converted or transformed"; citing col. 10, lines 12-35, and Fig. 6 shows color point, arguing "P6, or NCD, located outside of color gamut"); providing said compensated CMY color values as input to a graphical rendering device (arguing "in order to output a color of a certain L*a*b* value on a printer, it is sufficient to convert the L*a*b* value to an appropriate CMY value according to the color processing characteristics of the CMY value of each printer and to transmit the CMY value to a printer to print the color. Basically, by compensating for color processing characteristics"; citing col. 1, lines 54-60); printing patches of said compensated CMY color values (arguing "patches corresponding to CMY values outputted from a printer"; citing col. 12, lines 5-9); generating measured L*a*b* values for said patches (arguing "L*a*b* values are obtained by measuring the patch"; citing col. 12, lines 5-9); providing said patches as input to a color sensor (arguing "CMY patch outputted from a printer is measured to determine CMY color value in CMY space, and L*a*b* values are therefore obtained; thus, patches must be as input to a color sensor or color measurement device"; citing col. 11, line 65 to col. 12, line 19); providing said measured L*a*b* values as input to a second transformation module which transforms said L*a*b* values into NCD values (citing Fig. 5, step 5, L*a*b* is converted, or transformed, citing col. 10, lines 12-35, and Fig. 6 shows color point, P6, or NCD, located outside of color gamut); thereby completing a feedback loop which minimizes the error between the measured color and desired L*a*b* memory color providing improved control for colors that are located external to said gamut (citing Fig. 7, steps 11 to 22 are repeated when a color point falls outside of gamut until it values are adjusted, or transformed within the gamut, citing col. 12, line 42 to col. 14, line 11).

The Examiner admitted Shimizu does not disclose providing said NCD memory color values to an adder; providing the output from said adder as

input to an iterative controller which outputs compensated CMY color values; providing said patches as input to a color sensor.

The Examiner argued Ohkubo teaches said NCD memory color values to an adder (citing Fig. 13, arguing "If a color point is judged that is outside of a gamut, then L*a*b* value is adjusted, and added back into the loop and repeat steps 3, 4, and 5 until L*a*b* value is within the gamut; thus, in this process, NCD values, or the value of a color point outside the gamut is added into the loop for processing"; citing col. 30, lines 4-19); providing the output from said adder as input to an iterative controller which outputs compensated CMY color values (arguing "referring to Fig. 13, as stated above, if a color point is judged that is outside of a gamut, then L*a*b* value is adjusted, and added back into the loop, and repeat steps 3, 4, and 5, until the L*a*b* value is within the gamut; thus, in this process, NCD values, or the value of a color point outside the gamut is added into the loop for processing"; citing col. 30, lines 4-19).

The Examiner argued Shimizu and Ohkubo are combinable because these references are in the same field of endeavor of controlling, converting or transforming color outside of a color gamut, or outside of the range or limit of image reproduction that a rendering device, i.e. printer, can handle and therefore, to improve image reproduction quality.

The Examiner argued it would have been obvious to one skilled in the art to modify the method of Shimizu to include providing said NCD memory color values to an adder, and providing the output from said adder as input to an iterative controller which outputs compensated CMY color values as taught by Ohkubo. The motivation for doing so would have been to improve the control which is outside a target color gamut, and hence for better image reproduction quality, and further the disclosure provided by Ohkubo could be implemented by one another with predictable results.

The Applicant respectfully disagrees with this assessment. First, as previously discussed, the Examiner has specifically stated on the record numerous times that Shimizu does not teach or suggest a transformation module. Thus, the Applicant respectfully asserts that it is logically impossible

that Shimizu could teach or suggest that memory color values are provided to a transformation module.

Further, the Examiner's rejection of claim 23 specifically states "the programmed process is executed and performed by a computer... data is automatically provided as input to the image processing device shown... ". Thus, the Examiner has specifically stated on the record that the reference does not teach providing color values as input to a transformation module. Instead the reference teaches providing input to the image processing device. This discrepancy in teaching (providing input to a transformation module as claimed v. providing input to an image processing device as taught) is sufficient to render claim 23 not obvious in view of the references.

The new claim 23 also includes a limitation regarding a second transformation module. The Examiner has already admitted that Shimizu fails to teach or suggest even one transformation module. Surely the presence of two separate transformation modules, as now claimed, is sufficient to overcome the teaching or suggestion of zero transformation modules as provided in Shimizu.

The Applicant respectfully disagrees Shimizu teaches or suggests transforming L*a*b* memory color values into NCD memory color values using a transformation function. The Examiner argues Fig. 5, step 5 and col. 10 lines 12-35 teach transforming an L*a*b* color value into an NCD color value. However, the material cited actually teaches a conversion of an L*a*b* color to another L*a*b* color so that the color data is shifted to a point near the color gamut. There is absolutely no reason to accept that the "transformations" in the reference are from a memory color to the same color using NCD coordinates.

The Examiner then cites color point P6 as teaching "NDC". However, Shimizu specifically states "the closest neighborhood method converts the point (P6) to be converted to a point on the color gamut boundary closest to the point to be converted". No skilled artisan would read the above description of an L*a*b* conversion to a new L*a*b* value and the

description provided of point P6 and think to convert a L*a*b* memory color to an NCD memory color as claimed.

Once again the Examiner has found a few of the words of the claim in a reference and simply concluded the reference teaches the invention. The reference does not come close to teaching the limitation of this claim. Specifically: (1)there is no mention of NCD coordinates anywhere in the reference, (2) the reference specifically teaches that the L*a*b* value is transformed to a <u>new value</u> while the claim specifically states the L*a*b* values is simply converted to an NCD value (not changed), and (3) the reference, by Examiner's admission, does not teach a transformation module. The Applicant respectfully asserts the Shimizu reference fully fails to teach this limitation of the present claim.

The Shimizu reference also fails to teach or suggest a feedback loop <u>for minimizing error between measured color and the desired L*a*b*</u>. In the rejection of the claim, the Examiner specifically states the steps are repeated "when a color point falls outside the gamut until it values are adjusted, or transformed within the gamut". The Examiner will note the present limitation does not say the feedback loop is run until the color falls within the gamut. The limitation does state the feedback loop is run <u>until the error is minimized</u> between the measured color and the desired L*a*b*.

The Examiner will note any number of methods may be used to convert colors so that they are within a device gamut. However, that is not analogous to error minimization as specifically claimed. Indeed one major problem with gamut control is that colors can be converted to in gamut with little trouble, but the resultant color is often not true to the original image because the error associated with the conversion is considerable.

It appears the Examiner is equating an NCD color with "the value of a color outside the gamut". This is an improper interpretation of an NCD color. As Applicant's specification explains a "color 112 is also generally associated with directional axes D, C, and N". Further one skilled in the art would understand NCD coordinate system as a "system, where N is a vector coincident with the desired ray, and C and D are two orthogonal unit vectors

at right angles to N." The system is used in the present invention for performing transforms as described throughout Applicant's specification. As such, Examiner's citation to "value of a color outside the gamut" is insufficient to teach or suggest NCD coordinates or values as specifically claimed.

Thus, the Examiner's explanation of how Ohkubo teaches or suggests NCD color values provided to an adder is simply incorrect. The reference does not ever teach, suggest, or even contemplate the use of NCD coordinates as claimed in any capacity and is fully inapplicable as a reference to teach or suggest the same.

Being that neither Shimizu nor Ohkubo ever discuss NCD coordinates in any capacity it is clear that the limitations of claim 23 are not obvious in view of those references. Thus, the Applicant respectfully requests the rejection of claim 23 be withdrawn.

## III. Conclusion

In view of the foregoing discussion, the Applicant has responded to each and every rejection of the Official Action. The Applicant has clarified the structural distinctions of Applicant's invention via the discussion and amendments provided herein. Applicant respectfully requests the withdrawal of the rejections under 35 U.S.C. §103 based on the preceding remarks. Reconsideration and allowance of Applicant's application is also respectfully solicited. Applicant is also open to any suggestions from the Examiner, which the Examiner believes would place the Application in condition for allowance.

Should there be any outstanding matters that need to be resolved, the Examiner is respectfully requested to contact the undersigned representative to conduct an interview in an effort to expedite prosecution in connection with the present application.

Respectfully submitted,

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